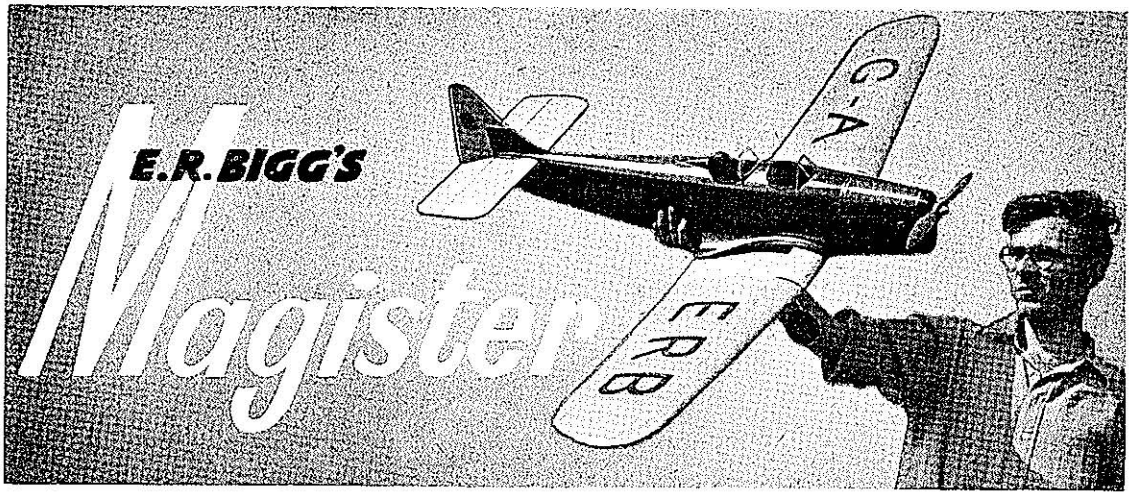
E.R. BIGG'S Magister



THE *Magister* was the result of a desire on my part to build something a little different. In 1948 I designed and built a 48 in. span "Blackburn Firebrand" and it was after my experiences with this model that I took up my pencil and evolved the *Magister*. "The low wing bug" had got me, and its problems only increased my interest.

An initial trouble was a tendency to swing right on take-off, and this was found to be entirely due to careless launching. The large side area of the *Magister* makes it a good weather vane! This does not matter once she is well airborne, but if the model is launched or made to take-off r.o.g. with the wind blowing from its port side it has great difficulty in circling left into wind. So be warned, always launch straight into wind or with the wind coming slightly from your right and you will have no trouble in this respect.

Do not expect the *Magister* to have a rocket-like climb; with the Mills 1.3 c.c. engine scale flight is obtained, the model cruising up in a steady climb. If over elevated a steeper climb is obtained but a stall will develop on the glide.

Fuselage

The basic frame of $\frac{3}{16}$ in. is built in the usual manner, the two sides being built on the plan. On removal from the plan the stern post is inserted and then, working forward, the cross-members, formers, and bulkheads are cemented into position until the fuselage shape is obtained. Next place the first $\frac{1}{2}$ in. × $\frac{1}{16}$ in. plank along the top of the fuselage and glue into position, thus ensuring that the formers above the basic frame are linked together and so protected from damage whilst other work is done. Cement into place the tailplane platform and the ply and block for the tail-wheel. Insert fillets behind first bulkhead as shown on the plan.

Sheet the sides of the fuselage and plank the upper curved section with $\frac{1}{16}$ in. sheet. Do *not* sheet the bottom of the fuselage yet. Mark out on the sheeting the cockpit shapes and tailplane position; carefully cut these out and reinforce rim of cockpits as shown on plan. (N.B.—It is a great help if the position of formers F.5-8 and the tailplane platform are marked in pencil before the last plank is put in place.) Cement into position the fin leading edge and link to sternpost with half rib. Sheet the fin with 1/32 in. sheet. Build up head-rest.

Centre-Section

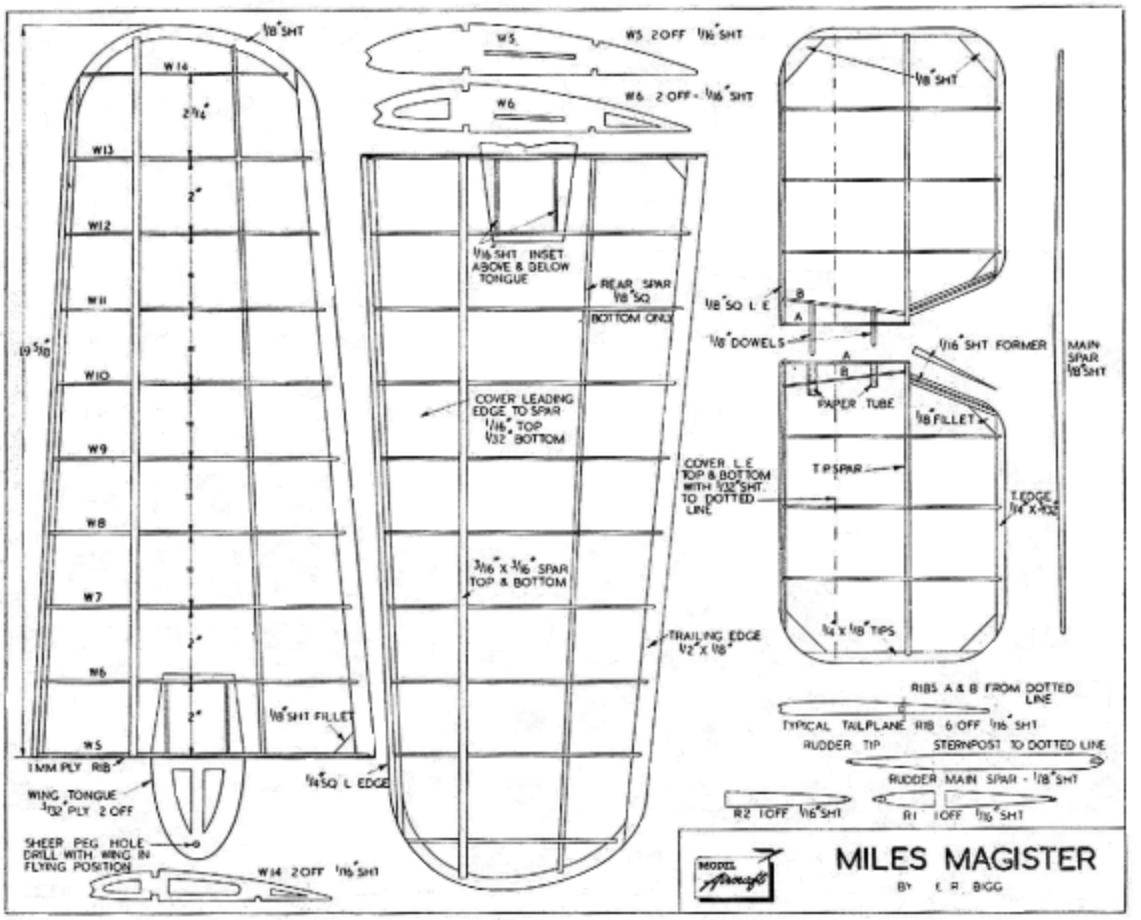
Mark on the side of the fuselage the position of rib W.1 and cement rib in place. (Note that U/C stress member cuts this rib completely in two.) Carefully cut out on both ribs the holes through which the leading edge, U/C stress spar, the main-spars, and the anti-warp spar are to pass. Cut out all parts necessary to build the centre-section, marking with a pencil where ribs will come when assembled.

Cement lower main spar to U/C stress spar. Insert through fuselage. Cement ribs in place on this only. Now add the upper main spar, leading edge, anti-warp spars and trailing edge. (The lower anti-warp spar and the trailing edge do not pass through the fuselage.)

Check centre section for alignment and be certain that ribs W.4 on each side are at the same angle of incidence, if necessary steam until this is so. Build in wing boxes and bind well. Do *not* sheet the centre-section until U/C assembly is complete.

Wings

These require little explanation and are of straightforward construction. The Clark Y section allows them to be built flat on the plan and so ensures



good alignment. The intervening ribs are constructed by using W.5 and W.13 as templates and placing the remainder as blanks in between them, carefully cutting and sandpapering them to the correct aerofoil shape.

All ribs are of $\frac{1}{16}$ in. sheet with the exception of the ply strengthening rib at the root. It is important however, that W.5 is cemented into place and the ply tongue inserted with the wing in flying position and entered into the wing box. This ensures a good joint between wing and centre-section.

Sheet the leading edge and insert $\frac{1}{16}$ in. sheet strengtheners in two root-rib bays.

Rudder

This is built up off the plan after all the parts have been cut to shape and size. Drill a hole through the stern post to allow for the insertion of the pendulum rudder mechanism. Hinge rudder as shown on plan. Insert 18 s.w.g. wire pendulum as shown and bind to rudder member.

N.B.—The pendulum weight is utilised to adjust the C.G. position if necessary, so that it is immediately behind the main spar.

Tailplane

This is built in two sections and is thus removable for ease of transport. If the fairing is cut away carefully the tailplane should be a nice snug fit and will need no other means of attachment apart from the dowels joining the two halves.

Undercarriage

Carefully mark the position of the hole for insertion of rod or knitting needle. Drill very carefully a $\frac{1}{8}$ in. hole through W.4 and W.3 The remainder of holes are burnt through with a suitable implement.

Insert the needle and check for alignment. Remove and drill a $\frac{1}{16}$ in. hole through centre of needle for insertion of 16 s.w.g. wire spring. File small flat on needle where U/C legs will be locked in position. Re-insert needle slipping on U/C legs and central sleeve. Glue in place U/C stops between W.3 and 4. Insert wire spring inside forward cockpit and glue ply strengtheners across the face of F.5, where indicated on the plan. Lock the U/C legs in position and check for alignment.

When the rudder and U/C are completed the bottom of the fuselage and the centre section may be sheeted. Do not do it before.